

MATERIAL SAFETY DATA SHEET

METHYL ETHYL KETONE MEK

CELANESE CHEMICAL COMPANY, INC.

1250 W. MOCKINGBIRD LANE/DALLAS, TEXAS 75247

EMERGENCY TELEPHONE NO: 806-665-5522

INFORMATION TELEPHONE NO: 214-689-4000

REVISION DATE: JANUARY, 1983

IDENTIFICATION

PRODUCT NAME: Methyl Ethyl Ketone (MEK)

CHEMICAL NAME: Methyl Ethyl Ketone

CHEMICAL FAMILY: Ketone

FORMULA: $\text{CH}_3\text{COCH}_2\text{CH}_3$

MOLECULAR WEIGHT: 72.10

SYNONYMS: 2-Butanone; MEK

CHEMICAL ABSTRACT

SERVICE NAME:

2-Butanone

CHEMICAL ABSTRACT

SERVICE NUMBER: 78-93-3

DEPARTMENT OF TRANSPORTATION
INFORMATION

HAZARD CLASSIFICATION: Flammable
Liquid

SHIPPING NAME: Methyl Ethyl Ketone

UNITED NATIONS NUMBER: 1193

D.O.T. EMERGENCY RESPONSE GUIDE NO:
26

PHYSICAL DATA

BOILING POINT (760 mm. Hg): 79.6°C

FREEZING POINT: -86.7°C

SPECIFIC GRAVITY ($\text{H}_2\text{O} = 1$ at 20/20°C):
0.8062

VAPOR PRESSURE (20°C): 77.5 mm Hg

VAPOR DENSITY (AIR = 1 at 20°C): 2.41

SOLUBILITY IN WATER (% by WT @ 20°C):
26.8

PERCENT VOLATILES BY VOLUME: 100

EVAPORATION RATE (BuAc = 1): 5.7

APPEARANCE AND ODOR: Colorless
liquid, acetone-like odor.

HAZARDOUS INGREDIENTS

MATERIAL: Methyl Ethyl Ketone,
99.8%

FIRE AND EXPLOSION HAZARD DATA

**FLAMMABLE LIMITS IN AIR,
% BY VOLUME**

LOWER: 1.97

UPPER: 11.00

FLASH POINT (TEST METHOD):

TAG OPEN CUP (ASTM D1310): 30°F

TAG CLOSED CUP (ASTM D56): 20°F

EXTINGUISHING MEDIA:

Use dry chemical, "alcohol foam", or CO_2 ; water may be ineffective, but should be used to keep fire-exposed containers cool.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear self-contained breathing apparatus (SCBA) and complete personal protective equipment. Use water spray to cool fire-exposed structures and tanks and to disperse vapor cloud if fire is not present.

**UNUSUAL FIRE AND
EXPLOSION HAZARDS:**

Vapor is heavier than air and may travel considerable distance to a source of ignition and flashback.

**NATIONAL FIRE PROTECTION
ASSOCIATION SECTION 325M & 704M
DESIGNATIONS:**

HEALTH: 1

FLAMMABILITY: 3

REACTIVITY: 0

REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Strong oxidizing agents. Chlorinated hydrocarbons in the presence of alkalis.

INCOMPATIBILITY

MATERIALS TO AVOID: Alkanolamines, amines, pyridines, ammonia, caustics, inorganic acids and isocyanates.

**HAZARDOUS COMBUSTION
OR DECOMPOSITION PRODUCTS:**

Carbon dioxide and carbon monoxide.

HAZARDOUS POLYMERIZATION:

Will not occur.

HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMITS

OSHA STANDARD: 200 ppm, 8-hour time-weighted average.

**ACGIH: THRESHOLD
LIMIT VALUE (TLV®):** 200 ppm, 8-hour time-weighted average; 300 ppm, Short-Term Exposure Limit.

ACUTE EFFECTS OF EXPOSURE

INGESTION (SWALLOWING): Slightly toxic; can cause narcosis.

INHALATION (BREATHING): Produces narcosis and irritation of the nose, throat and respiratory tract.

SKIN (DERMAL): Repeated or prolonged contact can cause drying of skin. Dermatoses and dermatitis have occurred with prolonged contact.

EYE CONTACT: Liquid and vapors are irritating to eyes. The liquid may cause eye injury.

METHYL ETHYL KETONE MEK

ACUTE ANIMAL TOXICITY DATA:

Oral, rats:

LD₅₀ = 2737 mg/kg

Inhalation, rats:

LCLo = 2000 ppm/4 hours

Dermal, rabbits:

LD₅₀ = 13 g/kg

CHRONIC ANIMAL TOXICITY DATA:

Rats exposed to vapor levels up to 5000 ppm for 90 days (6 hours/day) did not show any adverse effects.

MEK may potentiate the toxic effects of n-hexane, methyl butyl ketone and carbon tetrachloride.

Additional information concerning toxicity testing is available by contacting the Industrial Hygiene and Toxicology Department at 214/689-4000.

EMERGENCY AND FIRST AID PROCEDURES

INGESTION (SWALLOWING): Induce vomiting of conscious patient immediately by giving 2 glasses of water and pressing finger down throat. Contact a physician immediately.

INHALATION (BREATHING): Remove patient from contaminated area. If breathing has stopped, give artificial respiration, then oxygen if needed. Contact a physician.

SKIN CONTACT: Remove contaminated clothing and wash with large amounts of water. If irritation persists, contact a physician.

EYE CONTACT: Flush eyes with water for at least 15 minutes. Contact a physician immediately.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Place leaking containers in well ventilated areas. Eliminate ignition sources. Use foam to control vapors. Flush area with water sparingly or use an absorbent to contain and/or remove spill. Dike the spill to minimize contaminated area and facilitate salvage or disposal. Avoid run-off into storm sewers and ditches which lead to natural waterways. Call the National Response Center (800-424-8802) if spill is in reportable quantity (1 lb/day) under "Superfund". If required, state and local authorities should be notified.

WASTE DISPOSAL METHOD:

Incineration, biological treatment of dilute solution, or landfill if solidified prior to disposal. Use of injection wells may provide an alternate means of disposal for compatible materials.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE):

Use NIOSH approved organic vapor cartridge or canister respirator within use limitations of these devices; in all other situations, use self-contained breathing apparatus (SCBA).

VENTILATION

LOCAL EXHAUST: Recommended when appropriate to control employee exposure.

MECHANICAL (GENERAL): Not recommended as the sole means of controlling employee exposure.

PROTECTIVE GLOVES:

Neoprene or rubber gloves.

EYE PROTECTION:

Chemical safety goggles.

OTHER PROTECTIVE EQUIPMENT:

For operations where spills or splashing may occur, use an impervious body covering and boots. A safety shower and eye bath should be available.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Avoid product contact with copper or copper bearing materials. May form acetylene gas. The use of spark-resistant tools is recommended.

OTHER PRECAUTIONS:

Keep away from heat, sparks and flames. Keep container closed. Use with adequate ventilation.

MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form 158 (OS 4))

DPM 535

CHEMICAL NAME: METHYL ETHYL KETONE

SYNONYMS: 2-Butanone

CHEMICAL FAMILY: Ketones

FORMULA: $\text{CH}_3\text{COC}_2\text{H}_5$

MOLECULAR WEIGHT: 72.10

TRADE NAME AND SYNONYMS: Methyl Ethyl Ketone

I. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	79.6°C. (175.3°F.)	FREEZING POINT	86.3°C.
SPECIFIC GRAVITY ($\text{H}_2\text{O} = 1$)	0.8061 at 20/20°C.	VAPOR PRESSURE AT 20°C.	70 mm. Hg
VAPOR DENSITY (air = 1)	2.5	SOLUBILITY IN WATER, %, by wt. at 20°C.	26.8
PER CENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl Acetate = 1)	5.7
APPEARANCE AND ODOR	Clear liquid; nonresidual odor.		

II. HAZARDOUS INGREDIENTS

MATERIAL

TLV (Unit)

Not applicable

III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	22°F., Tag open cup	AUTOIGNITION TEMPERATURE	960°F.
FLAMMABLE LIMITS IN AIR, % by volume	LOWER	1.8	UPPER 10

EXTINGUISHING
MEDIA

Use carbon dioxide or dry chemical for small fires.
Use alcohol-type foam for large fires.

SPECIAL FIRE FIGHTING
PROCEDURES

None

UNUSUAL FIRE AND
EXPLOSION HAZARDS

None

EMERGENCY PHONE NUMBERS

Dr. C. U. Dernehl, 212/551-4785, 914/946-0646 (night)

Dr. K. S. Lane, 212/551-4787, 914/666-3656 (night)

C. P. Carpenter, Ph.D., 412/327-1020, 412/241-7896 (night)

Legal responsibility is assumed only for the fact that all studies reported here and all opinions are those of qualified experts.

BOE-C6-0209127

IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	200 ppm.
EFFECTS OF OVEREXPOSURE	Irritation of nose, throat and eyes. Headache, nausea, vomiting.
EMERGENCY AND FIRST AID PROCEDURES	Remove to fresh air and call a physician. Flush skin and eye contact with water. If swallowed, induce vomiting and call a physician.

V. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID	None
UNSTABLE	STABLE		
—	✓		
INCOMPATIBILITY (materials to avoid)	None		
HAZARDOUS DECOMPOSITION PRODUCTS	Thermal decomposition may produce carbon monoxide and/or carbon dioxide.		
HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID	None	
May Occur			
—	✓		

VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	Eliminate all sources of ignition. Flush with large volumes of water.
WASTE DISPOSAL METHOD	Atomize into an incinerator.

VII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)	All-purpose canister mask. Chemical cartridge respirator.		
VENTILATION	LOCAL EXHAUST	PREFERRED	SPECIAL
	MECHANICAL (general)	Acceptable	OTHER
PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION	
OTHER PROTECTIVE EQUIPMENT	None	Face shield	

VIII. SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING	METHYL ETHYL KETONE WARNING! FLAMMABLE. BREATHING OF VAPORS MAY BE HARMFUL. LIQUID AND VAPOR CAUSE EYE IRRITATION. Keep away from heat, sparks, and fire. Do not leave container open. Use with adequate ventilation. Avoid prolonged or repeated breathing of vapor. Avoid prolonged or repeated contact with skin. Avoid contact with eyes.
	FOR INDUSTRY USE ONLY
OTHER HANDLING AND STORAGE CONDITIONS	